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Detonation in Shock-Compressed Homogeneous Explosives\*, C. S. Yoo,  
N.C. Holmes, and P.C. Souers, Lawrence Livermore National Laboratory,  
Livermore, CA.

We have studied shock-induced changes in homogeneous high explosives including nitromethane, tetranitromethane, and single crystals of PETN by using fast time-resolved emission spectroscopy at a two-stage gas-gun. The results reveal three distinctive steps of which the homogeneous explosives chemically evolve to final detonation products. These are i) the initiation of shocked HE after an induction period, ii) thermal explosion of shock-compressed and/or reacting materials, and iii) a decay to a steady-state representing a transition to the detonation of uncompressed high explosives. Based on gray-body approximation, we have obtained the *C-J* temperatures: 3800 K for nitromethane, 2950 K for tetranitromethane, and 4100 K for PETN. We have also found that the *C-J* temperatures are independent of crystal orientation of PETN. In this paper we will compare the data with the chemical equilibrium models.

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Contact & Presenting Author:

Choong-Shik Yoo  
L-299, P.O. Box 808  
Lawrence Livermore National Laboratory  
Livermore, CA 94551  
(510) 422 - 5848  
(510) 422 - 2851 (FAX)  
yoo1@llnl.gov (e-mail)